

**CERTIFIED ENVIRONMENTAL TECHNOLOGY  
TECHNOLOGY TRANSFER ADVISORY**

**Hydromatix 786E Ion Exchange Rinsewater Recycling System**

**Issued To:**

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**Technology Description:**

Hydromatix Corporation developed its 786E Ion Exchange Rinsewater Recycling system to remove cations and anions from rinse wastewaters generated during metal finishing operations. The treated rinse waters can often be returned to the production lines for reuse, resulting in a closed-loop recycling system. Closed-loop recycling systems can help metal finishing industries achieve zero-discharge of wastewaters to the environment.

A series of acid and base rinses are used to regenerate the ion exchange resins. The use of acids and bases for regeneration also results in the production of regenerant wastewater. Hydromatix's 786E system features packed exchange columns with conductivity meters, electronic logic, and automatic valves to control the regeneration process. By reusing of portions of the acid and base rinses as make-up solutions for the next regeneration cycle, and by returning other rinses to the feed tank rather than to waste, the 786E system is able to achieve a substantial reduction in the amount of regenerant wastewater produced.

Over five test runs, DTSC found that an average of  $17.1 \pm 0.2$  gallons of regenerant waste was produced per cubic foot ( $\text{gal}/\text{ft}^3$ ) of resin regenerated. The cationic and anionic regenerant waste specific volumes were  $16.8 \pm 0.2$  and  $17.4 \pm 0.1$  ( $\text{gal}/\text{ft}^3$ ), respectively. The cation and anion exchange capacities restored during the regeneration process were  $94.5 \pm 6.8$  and  $88.7 \pm 1.7$  percent, respectively. DTSC was able to quantify the volume of rinse wastewater treated by the 786E system, the resin capacities, the resin utilization, and the regeneration efficiency. DTSC also quantified the masses of acid and base used during the regeneration process, and characterized the metal species found in the regenerant waste.

A copy of the published Certification Statement may be obtained by contacting the Department of Toxic Substances Control at (916) 322-3670 or on the Internet at <http://www.dtsc.ca.gov/sppt/pptd/td/techcert.html>.

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